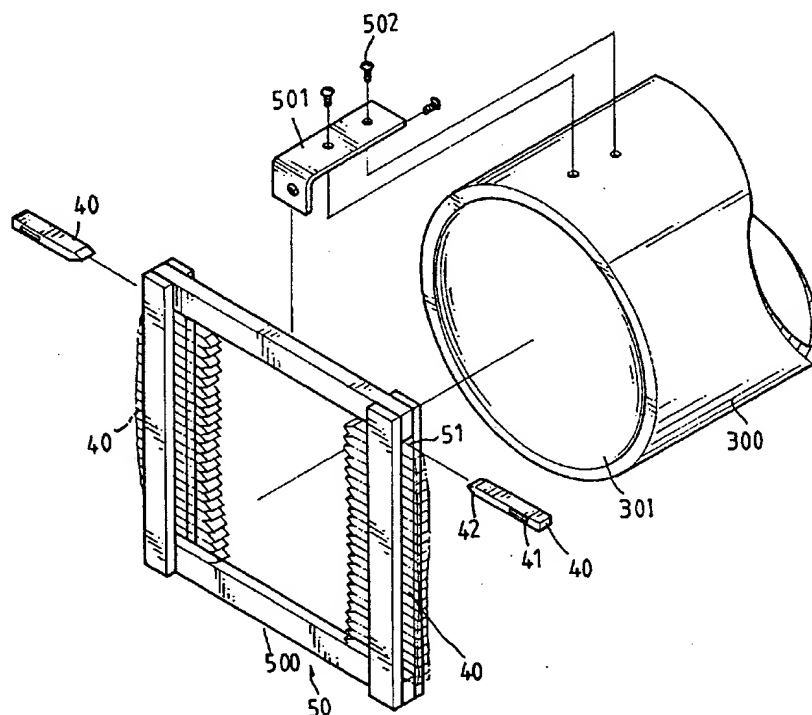




- (72) JAW, Sybeen, TW
(72) GAO, Chung-Hsing, TW
(71) Chung-shan Institute of Science and Technology, TW
(51) Int.Cl.⁶ G02B 27/18, G03B 21/14, G03B 21/13
(54) **METHODE ET DISPOSITIF D'ELIMINATION DES BORDURES
DE DEUX FILMS DE PROJECTION**
(54) **METHOD AND DEVICE FOR ELIMINATING EDGES OF TWO
PROJECTION PICTURES**



(57) A device for eliminating overlapped edges of two adjacent projection pictures includes a plurality of plates movably disposed in front of a projection lens and each of which has a sharp end so as to be moved toward the lens from a periphery of the lens. A diffraction will be occurred around the sharp ends of the plates to adjust brightness of an overlapped area of the two adjacent projection pictures.

ABSTRACT OF THE DISCLOSURE

A device for eliminating overlapped edges of two adjacent projection pictures includes a plurality of plates movably disposed in front of a projection lens and each of which has a sharp end so as to be moved toward the lens from a periphery of the lens. A diffraction will be occurred around the sharp ends of the plates to adjust brightness of an overlapped area of the two adjacent projection pictures.

METHOD AND DEVICE FOR ELIMINATING EDGES OF TWO PROJECTION PICTURESBACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a device and a method for eliminating overlapped edges of two adjacent projection pictures and, more particularly, to an improved device and method which includes a comb filter disposed in front of a lens of a projector so as to produce a diffraction feature to adjust light distribution on an area of overlapped edges between two projection pictures.

2. Brief Description of the Prior Art

Generally, when a large projection picture or a visual scene is needed to be projected on a screen, for example, 20 meters times 20 meters, a plurality of projectors are required to be arranged at suitable positions so that all the projection pictures from the projectors can assemble a complete scene. These projection pictures are arranged to show on a screen with a specific sequence, that is to say, these projection pictures are arranged side-by-side. Referring to Figures 1 and 2, three projectors 10, 11, 12, for example, are used to project three respective projection pictures 100, 110, 120 on a screen, wherein each one of the three projectors 10, 11, 12 has three projection lenses 3. There will be two overlapped areas 10a, 10b formed on the screen. The area 10a is composed of a first boundary portion 101 from the projector 10 and a second boundary portion 111 from the projector 11, the area 10b is composed of the second boundary portion 111 and a third boundary portion 121.

1 Accordingly, the two areas 10a, 10b will be brighter than that
2 on the three projection pictures 100, 110, 120. These areas
3 10a, 10b are shown as two edges defined between any two
4 adjacent pictures, and this seriously reduces a quality of
5 the whole picture on the screen. Furthermore, the edges could
6 mis-guide the viewer when used in an imitation machine for
7 pilots. A conventional method to eliminate overlapped edges
8 on the screen is to dispose at least one "edges reducing
9 processing device" and adjust circuits of the projectors to
10 adjust a brightness of the projection pictures. However, the
11 edge reducing processing device uses a complicated circuit
12 and many expensive parts so that the device has a high price
13 which cannot be afforded by ordinary companies. Besides, such
14 a device has a good performance on a plan screen but a curved
15 screen. When the picture comprises a bright area such as the
16 sky, and a dark area such as the land, the overlapped areas,
17 if in the sky area, will show a brighter area, and if in the
18 land area, will show a darker area. This is conventionally
19 adjusted by adjusting a "gamma value" of the device by
20 computer. Generally, there have 147,456 choices of the "gamma
21 value" to be chosen and this definitely takes very much time.

22 The present invention intends to provide an improved
23 device and method for eliminating overlapped edges of two
24 adjacent projection pictures to mitigate and/or obviate the
25 above-mentioned problems.

26 SUMMARY OF THE INVENTION

27 In one aspect of the present invention, there is
28 provided a device for eliminating overlapped edges of two
29

1 adjacent projection pictures, comprising a plurality of plates
2 being adapted to be movably disposed in front of a projection
3 lens, each of the plates having a sharp end which is adapted
4 to be movably disposed relative to a periphery of the lens.

5 It is an object of the present invention to provide a
6 device which movably disposes a plurality of plates in front
7 of a lens of a projector to produce diffractions around the
8 plates to eliminate overlapped edges of two projection
9 pictures.

10 It is another object of the present invention to
11 provide a method to eliminate overlapped edges of two
12 projection pictures.

13 Other objects, advantages, and novel features of the
14 invention will become more apparent from the following
15 detailed description when taken in conjunction with the
16 accompanying drawings.

17 BRIEF DESCRIPTION OF THE DRAWINGS

18 Fig. 1 shows an illustrative view of three
19 conventional projectors and a screen on which two overlapped
20 areas are formed;

21 Fig. 2 shows an illustrative view of three
22 conventional projection pictures and the two overlapped areas
23 on the screen as shown in Fig. 1;

24 Fig. 3 is a perspective view of a projector which has
25 three devices in accordance with the present invention
26 respectively disposed in front of three lenses of the
27 projector;

28 Fig. 4 is an exploded view of the device in accordance
29

1 with the present invention and the lens;

2 Fig. 5 is a fragmentary view to show the plates and
3 the rails of the frame;

4 Fig. 6 is a front end elevational view to show the
5 device of the present invention;

6 Fig. 7 is an illustrative view to show the plates are
7 adjusted when the projector is operated;

8 Fig. 8 shows a flow chart to describe a method of the
9 present invention;

10 Fig. 9 shows an illustrative view of three projectors
11 each having the device of the present invention and a screen
12 on which two overlapped areas are formed, and

13 Fig. 10 shows an illustrative view of three projection
14 pictures and the two overlapped areas which are eliminated by
15 the device of the present invention.

16 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

17 Referring to the drawings and initially to Figs. 3
18 through 6, a projector 20 generally has three projection
19 lenses 30, 31, 32 which respectively control base colors,
20 red, green and blue to be projected on a screen 60 as shown
21 in Fig. 9. A device in accordance with the present invention
22 generally includes a frame 500 which is rectangular and
23 fixedly connected to a tube 300 by a connector 501 with
24 screws 502. The tube 300 has a lens 301 received therein so
25 that light will be projected to the screen 60 via the lens 301.
26 The frame 500 is disposed in front of the lens 301 and has
27 two opposite sides. Each of the two sides has two columns 50
28 with a slot 51 defined between the two columns 50, each of
29

1 the two columns 50 having a plurality of rails 52 extending
2 from an inner side thereof. A plurality of plates 40 each
3 have a sharp end 42 and two ribs 41 respectively extend from
4 two opposite sides of each of the plates 40 so that the two
5 ribs 41 are supported and movably disposed between two
6 opposite rails 52. Each of the sharp ends 42 of plates 40
7 extend into an area of the lens 301 and are movably disposed
8 relative to a periphery of the lens 301.

9 Referring to Fig. 7, when operating the projector 20,
10 light is emitted through the lens 301 and the light can be
11 supposed to have a central portion H and two boundary
12 portions H1. Referring to Figs. 9 and 10, an embodiment is
13 taken to describe how the device works, three projectors 20,
14 21 and 22 each have three lenses 30, 31, 32 so that there
15 will three projection pictures 200, 210 and 220 shown in the
16 screen 60. Two overlapped areas 211, 212 are respectively
17 formed between the three pictures 200, 210 and 220, and each
18 of the overlapped areas 211, 212 are formed by the overlapped
19 boundary portions H1.

20 Referring to Figs. 7 and 8, the plates 40 are moved
21 toward the corresponding lens 301 so that a diffraction is
22 occurred around the plates 40. The diffraction reduces
23 brightness of the boundary portions H1 so that the brightness
24 of the overlapped areas 211, 212 can be adjusted thereby.
25 Therefore, an operator may adjust the plates 40 by pushing
26 them toward the lens 302 or pulling them away from the lens
27 302 till a desired brightness is reached in the overlapped
28 areas 211, 212.

1 It is experienced that the device in accordance with
2 the present invention does not need highly trained or skilled
3 persons to operate and the cost thereof is much lower than
4 the conventional one. Furthermore, the device is well
5 performed on a curved screen.

6 Although the invention has been explained in relation
7 to its preferred embodiment, it is to be understood that many
8 other possible modifications and variations can be made
9 without departing from the spirit and scope of the invention
10 as hereinafter claimed.

What is claimed is:

1. A device for eliminating overlapped edges of two adjacent projection pictures, comprising:

a plurality of plates being adapted to be movably disposed in front of a projection lens, each of said plates having a sharp end which is adapted to be movably disposed relative to a periphery of said lens.

2. The device as claimed in claim 1 wherein a frame is adapted to be disposed in front of said lens and has two opposite sides, each of said two sides having a plurality of rails formed thereto so that said plates are guided along said rails.

3. The device as claimed in claim 2 wherein each of said two sides of said frame includes two columns with a slot defined between said two columns, each of said columns having said rails extending from an inner side thereof.

4. A method for eliminating overlapped edges of two adjacent projection pictures, comprising:

step 1: a plurality of plates being adapted to be disposed in front of a lens and relative to a periphery of said lens;

step 2: said plates being adapted to be moved toward relative to said lens so that a diffraction is occurred around said plates, and

step 3: adjusting said plates till a desired brightness is reached in said overlapped edges.

5. The method as claimed in claim 1 wherein each of said plates has a sharp end.

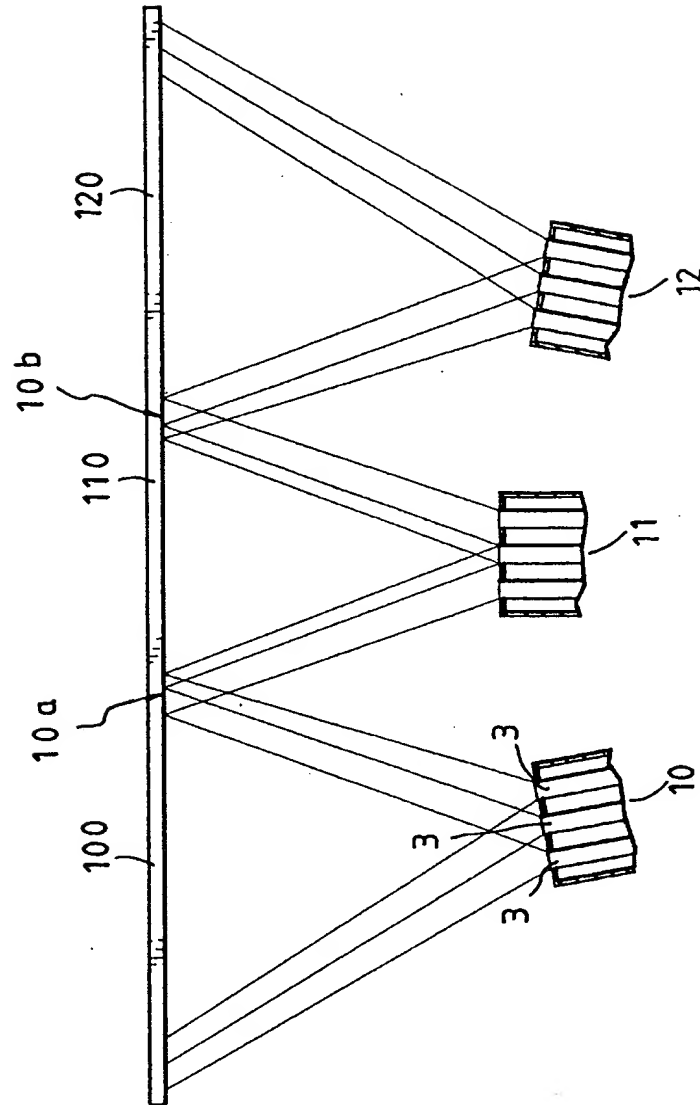


FIG. 1
PRIOR ART

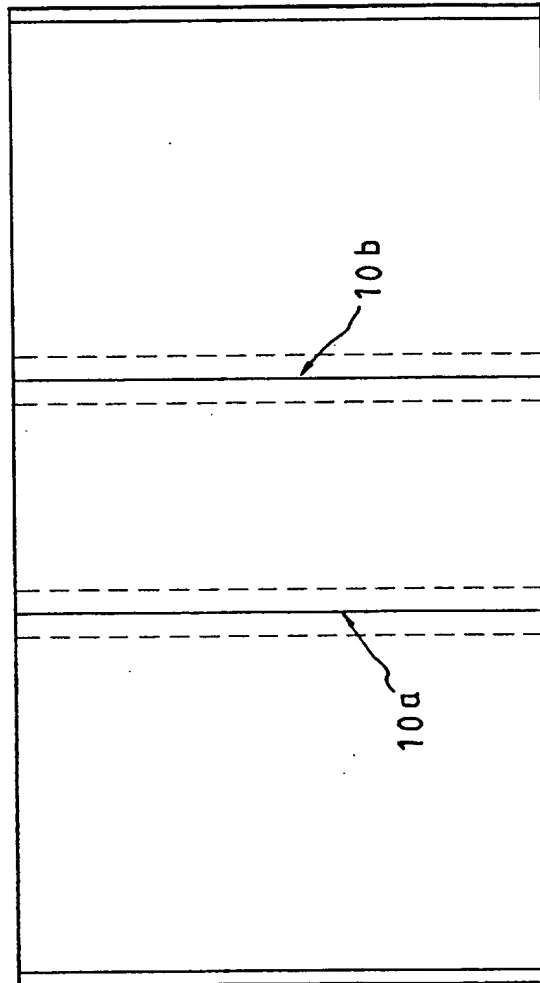


FIG. 2
PRIOR ART

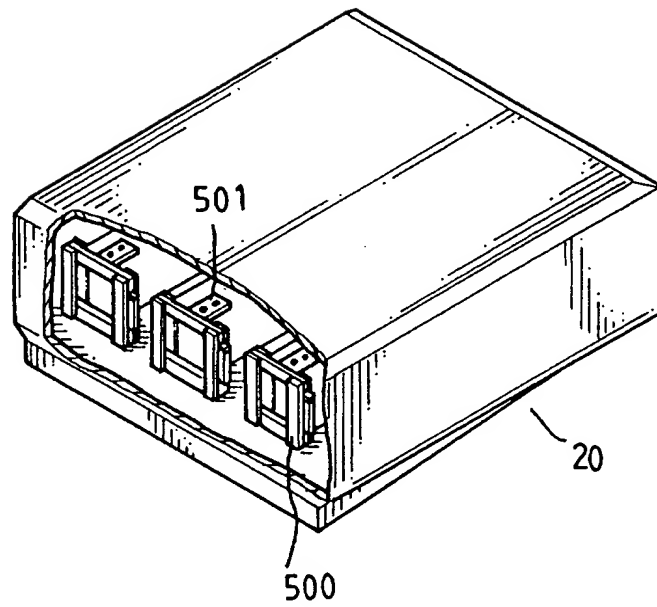


FIG. 3

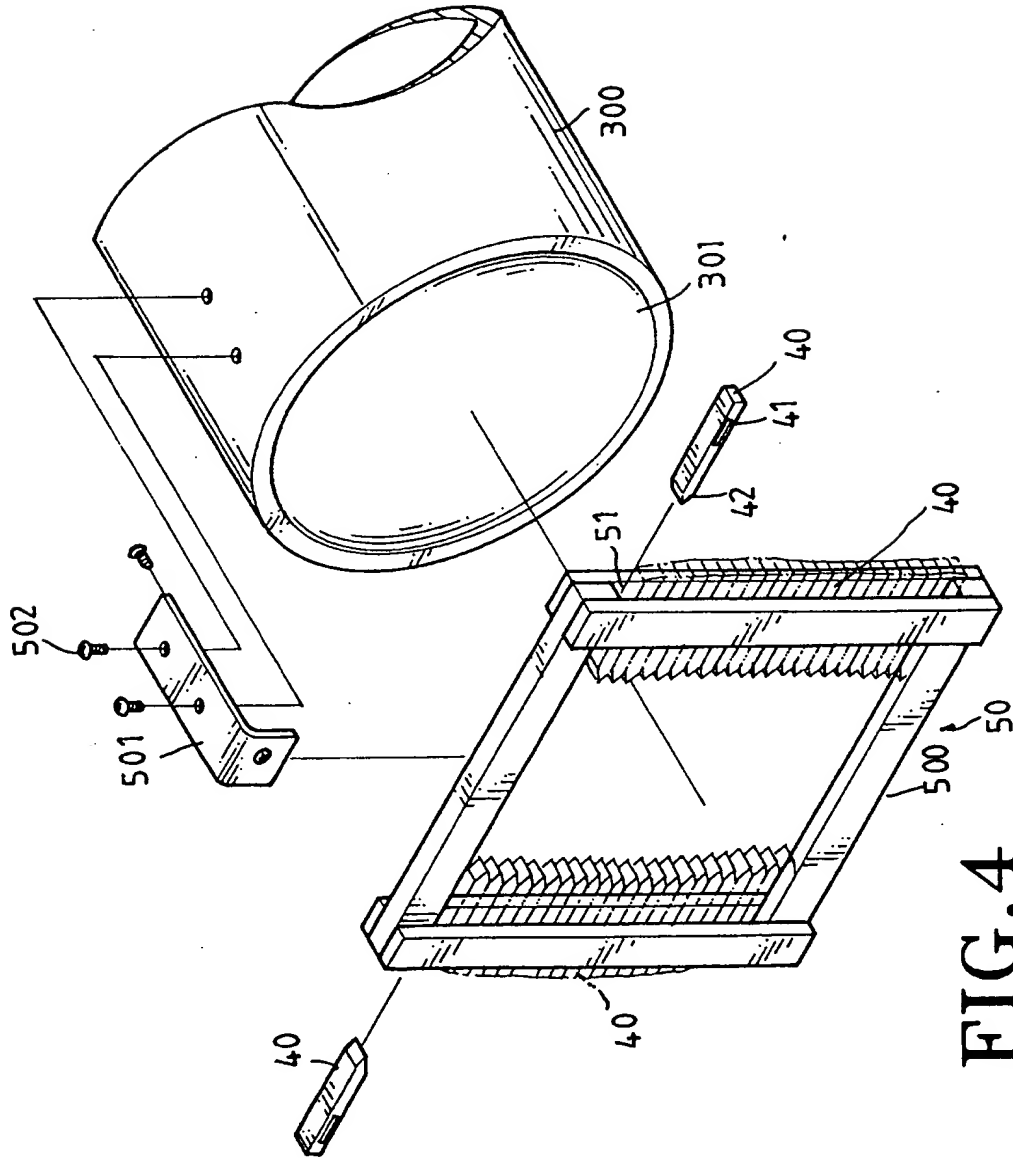


FIG. 4

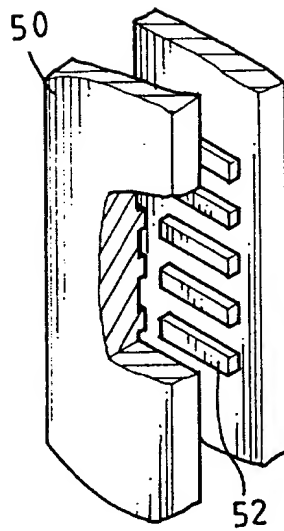


FIG. 5

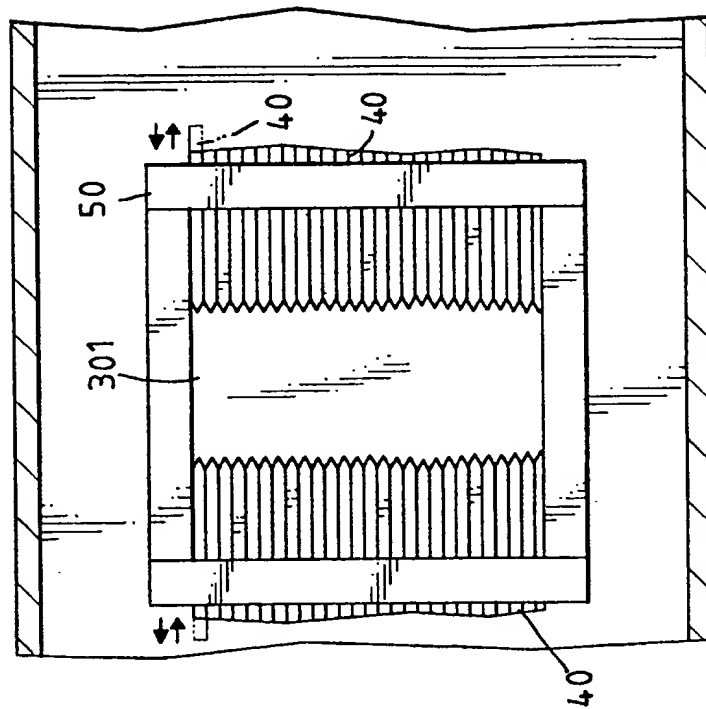


FIG.6

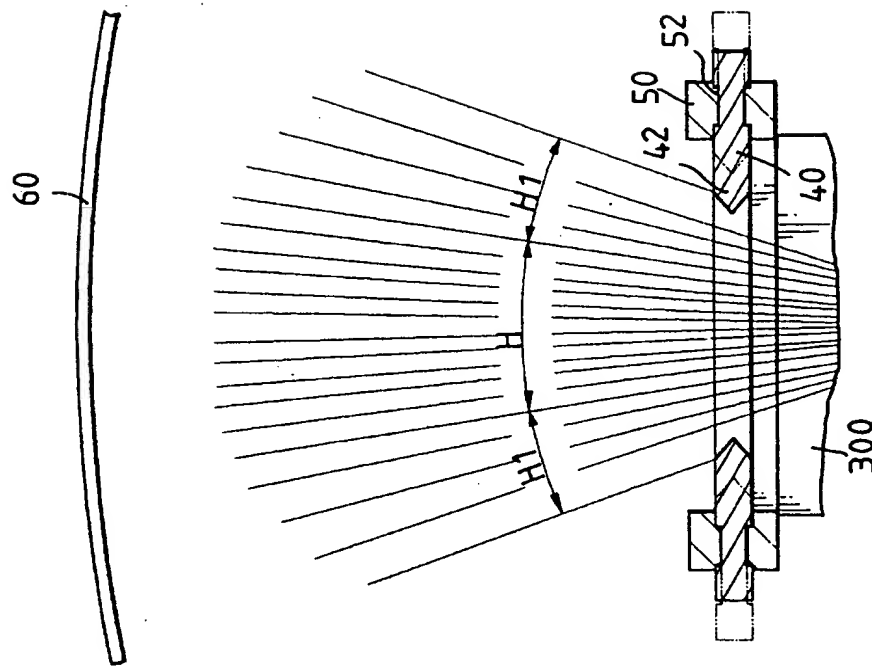


FIG. 7

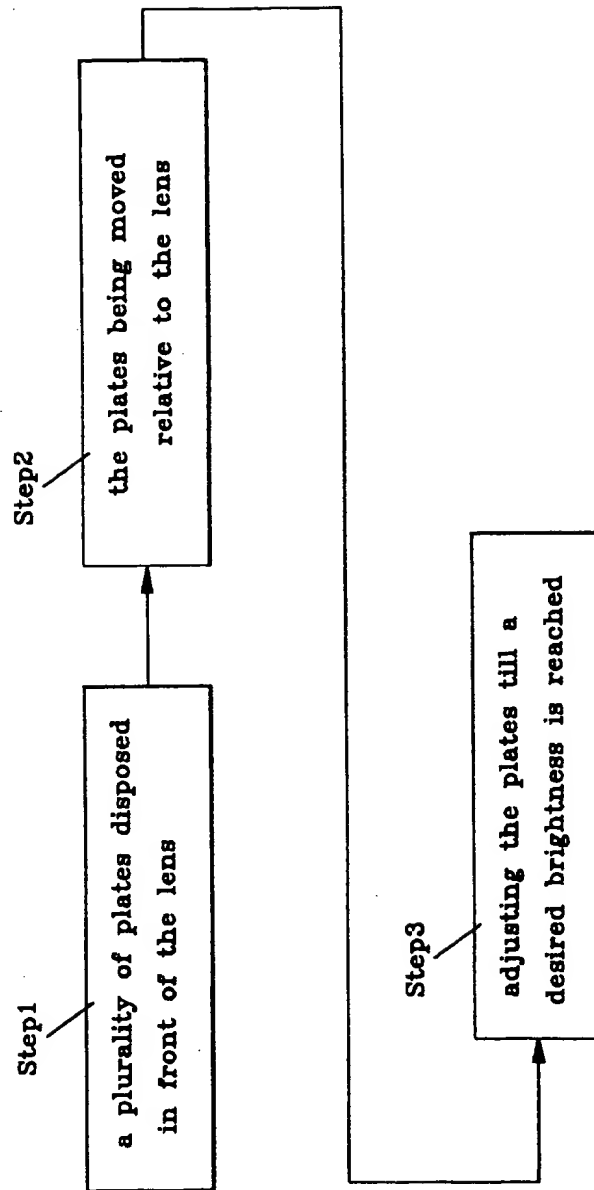


FIG. 8

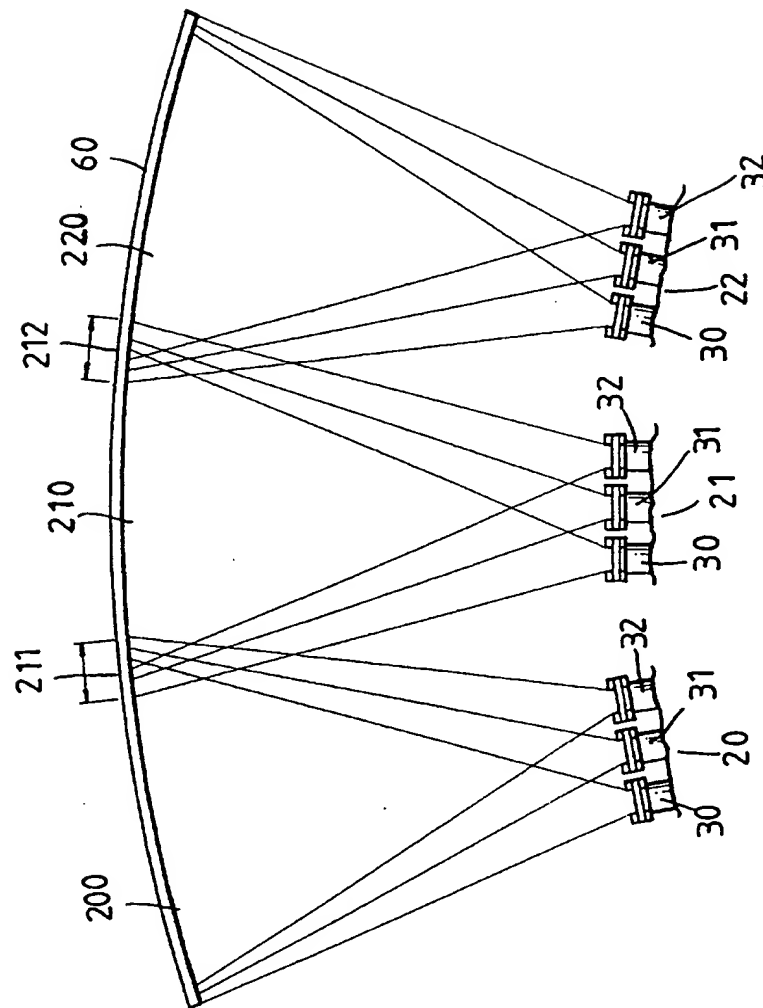


FIG. 9

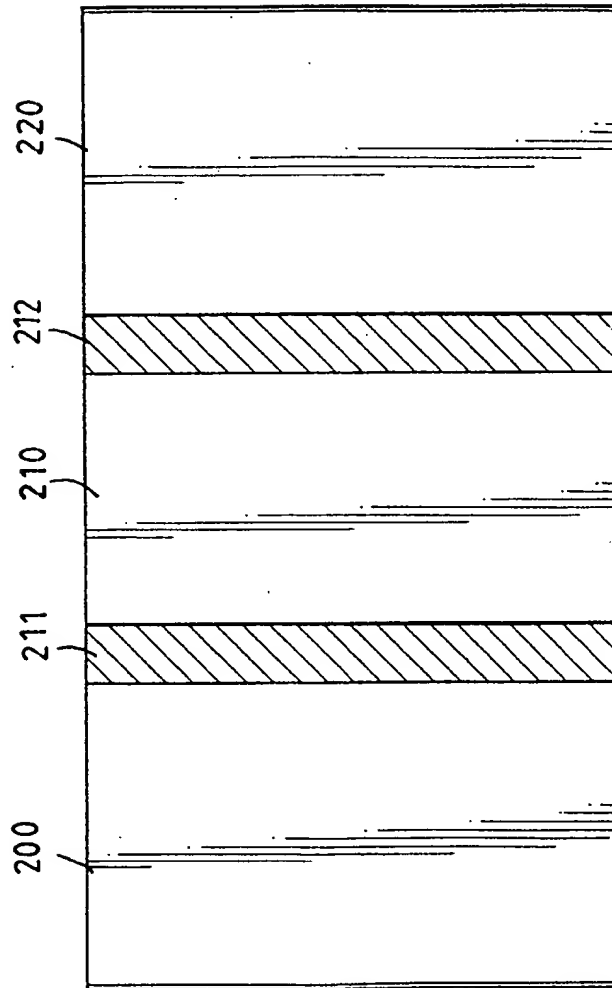


FIG. 10

